

Exhibit 29

Retrieval from Autobiographical Memory

Many survey questions seek autobiographical quantities for which respondents can recall partial information, even when they cannot remember enough for a precise answer. It is therefore important to understand the properties of memory for autobiographical facts and their potential influence on surveys.

First, it is clear that people sometimes cannot recall an event, even when they have numerous cues and when the event itself is readily distinguishable from others (8, 17). For example, a recent study of recall for personal events (17) found that 20% of critical details—selected at the time of occurrence to be “certainly” remembered if the events were recognized—were irretrievable after 1 year; 60% were irretrievable after 5 years (see function for “critical details” in Fig. 1). Similar very long term forgetting functions have appeared in studies of adult memory for the names of high school classmates (18), subject memory for facts about participation in previous laboratory experiments (19), alumni memory for the streets of a college town (20), and college student memory for the events of a semester (21) and for the names of grade school and high school teachers (22). The precise form of the long-term forgetting function clearly depends on the nature of the queried material (Fig. 1).

There is evidence that repeated attempts to recall can bring to light relevant new material, even after nine retrieval sessions of 1 hour each (23). Although some data suggest that no event entirely disappears from memory (24), the effort required for retrieval can be immense, exceeding the capacity of even the most motivated respondent. A personal interview of an hour or an hour and a half typically includes at least 150 questions, rarely allowing more than a minute for a well-considered answer. Telephone interviewing, which has replaced face-to-face interviewing in all but the most important (and expensive) surveys, implicitly demands responses still more rapidly since both interviewers and respondents are uncomfortable with silence (25).

Some recent experiments suggest that it takes on the order of several seconds for people to retrieve a specific event in response to instructions to recall taking part in some common activity, such as going out for a drink or having a haircut (26). This means that survey accuracy may decline when too many questions are asked within the limited time period that respondents are willing to devote to a survey. Increasing the amount of time for a response can affect the strategy a respondent uses, as well as the accuracy of the resulting answer (7, 27). One effect of longer questions is to give people more time to recall events, thus producing better responses (28).

Recalling autobiographical events is more difficult if memory

contains many similar incidents. Initially distinguishable events can become confused or irretrievable because of interference from later events (8, 17, 29). To take a prominent example, John Dean's testimony before the Watergate committee included a detailed description of his meeting with President Nixon on 21 March 1973. This is the meeting where Dean told Nixon of the “cancer” growing on the presidency. The subsequent discovery of tape recordings made in the Oval Office allowed comparison between Dean's testimony and what actually occurred. The 21 March recording revealed deliberations about blackmail demands from Watergate defendants that Dean, in his testimony, placed 8 days earlier. The gist of the conversation was accurate, but despite the intensive preparation for his Senate appearance and the significance of the 21 March encounter, Dean confused the meetings of 13 March and 21 March (30).

Of course, recall usually improves if a respondent has appropriate cues, although different types of cues vary in effectiveness. A prompt about what happened on a particular occasion, who was involved, or where the event took place improves memory for other aspects of the event (17). The date of an event is generally a poorer cue (17, 31). Cues about the location and social occasion of events have successfully increased accuracy of recall in experimental surveys (14). Some surveys that focus on complex information, such as hospital stays, medical expenses, or household repair costs, ask respondents (by means of an advance letter) to gather records, review them, and have them available during the interview. Other surveys use recall aids, such as lists of events or products, enabling respondents to use recognition rather than recall as a strategy for reporting their behavior (13). The use of records, however, does not guarantee that reports will be accurate. A study in the Netherlands, for example, found that only 47% of respondents who consulted records gave the correct balance in their savings account, a modest increase over the 31% accuracy rate for respondents who did not examine records (32).

Experiments on autobiographical memory show that people achieve better levels of recall if they are required to begin with the most recent item in a series and work backward than if they must begin at the beginning (22, 33). Left to their own devices, however, people prefer forward recall for some events and backward recall for others (33). Most survey designs pay little attention to respondents' strategies for ordering recall of such series as doctor visits, hospitalizations, crimes, or spells of unemployment.

Finally, emotional or important personal experiences (34, 35) or public occurrences, such as presidential assassinations (36), can produce subjectively vivid “flashbulb” memories of an individual's circumstances at the time of the event. Such occasions are less often the target of survey research than everyday happenings like the ones in the sample questions cited earlier; however, they may serve as useful landmarks for everyday events.

Temporal Organization for Personal Facts

Because personal experience takes place in time, it is natural to think of memory as a continuous record. Current experiments, however, suggest that autobiographical memory has a more discrete temporal structure that inhibits certain forms of recall and facilitates others. Thus, a person might remember a specific episode—say, a visit to a dentist—as part of an extended temporal-causal unit beginning with a toothache, continuing with an initial appointment, and finishing with the last of a series of dental visits. We refer to these connected groups of events as “autobiographical sequences” (37).

One source of evidence for autobiographical sequences comes

Fig. 1. Four functions showing the rate of forgetting for common types of autobiographical information. Open triangles indicate college students' recall of names of their grade school and high school teachers (22); open circles denote adults' recall of names of their high school classmates (unadjusted rates) (18); black boxes represent critical details for daily events (17); open diamonds denote names of streets in alumni's college town (unadjusted rates) (20). Data on classmates' names and street names are percentages of original recall at the time of graduation.

